Health and Strategic Environmental Assessment

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This chapter elaborates on how human health is dealt with in strategic environmental assessment (SEA), both in theory and practice. The evolving understanding of the concept of SEA is outlined and the existing empirical evidence for the consideration of health in SEA is presented. It is shown that in current practice, whilst aspects affecting physical aspects of health (e.g. pollution, emissions) are routinely considered, social and behavioural aspects are only occasionally covered. An important question arising is whether and if, how, all health determines should be considered in SEA.

1 Introduction

Since the term strategic environmental assessment (SEA) was first used in the second half of the 1980s, it has become the most widely employed notion globally for the assessment of environmental impacts of public and increasingly private decision making activities above the level of individual development projects, at which the term environmental impact assessment – EIA – is commonly used. Decision making tiers at which SEA is applied are frequently referred to as policies, plans and programmes (PPPs; Wood and Djeddour, 1992).

The statutory practice of conducting environmental assessments at the level of PPPs predates the establishment of the term and goes back more than another 15 years. Formal requirements for the environmental assessment of US Federal activities were first formulated in the National Environmental Policy Act in 1969 (NEPA; Sigal and Webb, 1989). This Act did not distinguish between different decision-making levels, but made general reference to *actions* for which environmental impacts were to be formally assessed. These included both, project as well as more strategic decision making situations (Brown and Nitz, 2002). Subsequently, in the US, assessments above the project level started being referred to as programmatic environmental assessments (PEA). To this date, PEA has remained a US American version of SEA. Whilst NEPA did not define different approaches for assessments at different application levels, it is now widely accepted that the way in which assessments are effectively conducted differs, depending on the specific situation of application (Fischer, 2001). Whilst on the one hand there are distinct differences between different types of SEA, on the other hand there are also commonalities between SEAs applied in similar situations, including e.g. the specific decision making tier (projects, programmes, plans and policies) and the sector in which it is applied. SEA takes different forms, with regards to e.g. the assessment process, the substantive issues covered, the methods and techniques used, the acting strategies of those conducting it and the way in which different actors contribute to it. This means there is no one-fits-all approach of the instrument (Fischer, 2013; Tonk and Verheem, 1998).

Over the past decade, the development of SEA practice internationally has been particularly influenced by the European Directive 42/EC/2001 on the assessment of environmental impacts of certain plans and programmes, which was published in July 2001 and which had to be transposed by EU member states by July 2004. Whilst the term 'strategic environmental assessment' itself is not mentioned anywhere in the Directive, internationally it is commonly referred to as the 'SEA Directive'. The Directive has not only made SEA a routine application for numerous spatial and sectoral plans and programmes in the 27 EU member states, it has also heavily influenced the development of SEA in other countries and international institutions, as well as development banks. It is likely that several 1000s of SEAs have been conducted in EU member states alone since 2004 (Fischer, 2010; European Commission, 2009).

In addition to the SEA Directive, the UNECE protocol on SEA to the Convention on EIA in a trans-boundary context (the Espoo Convention) has also played an important role in the development of SEA. This entered into force in 2010 and has made SEA binding for a further five non-EU European countries in addition to the 27 EU member states which have to comply with the SEA Directive, namely Albania, Armenia, Croatia, Montenegro and Serbia. Finally, formal SEA systems have also been developed elsewhere in the world, including China, Hong Kong, South Korea, Norway, the Ukraine and Guinea Bissau (OECD, 2012). The US, Canada, Australia and New Zealand have had environmental assessment requirements in place that have covered both, project and strategic decision making levels for several decades (Dalal-Clayton and Sadler, 2000). Whilst Bhutan also introduced SEA legislation in 2002, subsequently, this was not implemented (OECD, 2012). This means that there are now over 40 countries with formal SEA requirements and associated legislation. In addition to these, there is also some substantial voluntary practice, and practice in developing countries driven by development banks (including e.g. the World Bank, the Inter-American Development Bank and the Asian Development Bank). In this context, the OECD DAC Environet SEA Task Team which regularly surveys SEA activities in developing countries, tracked over 150 separate SEA initiatives in 2012. In addition to the rapidly growing use of SEA, related research activities and outputs have also grown significantly over the past 20 years. Fischer and Onyango (2012), for example, estimated that there are now over 500 English speaking refereed journal articles on SEA. However, an analysis of 263 SEA articles revealed that only about 1% of these were explicitly dealing with health.

Most SEA systems globally formulate requirements for how the instrument is to be conducted, in particular in terms of the process applied and the substantive issues addressed. Next to biophysical issues, 'human health' is an issue which is routinely included. In this context, NEPA, for example mentions health several times, i.e. to '*promote efforts which will […] stimulate the health and welfare of man', 'assure for all Americans […] healthful surroundings',* and *'attain the widest range of beneficial uses of the environment without degradation, risk to health or safety'* (all from § 102). Furthermore, the European SEA Directive in Annex 1 specifies that '*[…] information […] be provided on […] the likely significant effects on […] human health'* and that '*criteria for determining the likely significance of effects*' include '*characteristics of the effects and of the area likely to be affected, having regard, in particular, to [...] the risks to human health*' . Whilst SEA legislation from some other countries also mentions health (e.g. the Canadian Directive refers to health in its Annex), others do not (including those of e.g. Australia, China and South Korea).

What is of particular importance with regards to SEA's potential for improving the consideration of health in policy, plan and programme making procedures is its statutory status in over 40 countries and development bank requirements in many developing countries. This means that for many initiatives there are formal requirements to use it, thus making it different from many other impact assessment instruments, which are often applied voluntarily. Negative health impacts could thus be systematically avoided in many policies, plans and programmes and positive health outcomes be enhanced though SEA.

Subsequently, firstly, the evolving understanding of SEA is further elaborated on. This is done with a view as to where, when and how health may be considered. This is followed by a discussion on what aspects of health may potentially be considered in SEA. The empirical evidence produced to date of the performance of SEA with regards to improving the consideration of heath is then summarised. Finally, conclusions are drawn and recommendations are given for how the consideration of health in SEA may be advanced further.

2 Strategic environmental assessment – an evolving concept

Understanding of SEA has continuously evolved ever since the term was first used. This has been accompanied by a rapid growth of SEA practice and professional publications world-wide. The conceptual development of SEA has taken place in terms of various components, in particular (a) the assessment process, (b) the scope of substantive issues covered, and in this context the extent of integration with other assessment tools, (c) contextual aspects that enable effective SEA, as well as (d) the methods and techniques used and (e) acting strategies of assessors. Considering the range of issues that are important for making SEA an effective decision support instrument, SEA is increasingly portrayed in terms of a 'framework' rather than just a process (Fischer, 1998, 2006; Partidario, 2000). Subsequently, different SEA components are elaborated on in further detail.

2.1 SEA Process

Initially, SEA was understood as involving the application of a project EIA process to strategic initiatives (Fischer and Seaton, 2002), consisting of a number of distinct stages. It is important that these stages are identical to those that are often said to make up an effective health impact assessment (HIA) process (see e.g. WHO, 2001). An EIA based SEA process includes:

- Screening: establishing whether an assessment is necessary for an initiative, i.e. determining whether any significant environmental (including health) impacts are likely to arise as a consequence of the initiative[1]; screening is explained further by e.g. Morris and Therivel (2009).
- Scoping: once an assessment has been found to be necessary, its scope needs to be determined; decisions need to be made on e.g. what baseline data are required, what alternatives should be considered, what impacts (including those on health) should be assessed, what public or private entities should contribute to SEA and what techniques and methods should be used; scoping is explained further by e.g. Fischer and Phylip-Jones (2008).
- Impact assessment and report preparation: the assessment of environmental (including health) impacts needs to be conducted and a report needs to be prepared, which should include recommendations on the choice of alternatives, as well as mitigation and potentially compensation measures; a more comprehensive report is usually accompanied by a non-technical summary; for more information, see e.g. Fischer (2007).
- Consultation and participation: statutory and non-statutory bodies (including those representing health), as well as the general public should be involved in any assessment, at least during scoping and impact assessment stages; consultation and participation can mean very different things and can range from simply informing others to actually allowing them to influence decisions; consultation and participation are further explained by e.g. Aschemann (2008).
- Decision making on the initiative: it is crucial that at this stage, the results of the SEA are considered; ideally, the decision maker would justify any decisions made in the light of the findings of the assessment (including what is said on health).
- Monitoring and follow up: once a decision has been made to go ahead with an initiative, actual developments need to be monitored; if e.g. actual impacts are found to be not in line with predicted impacts, ideally corrective action should be possible; furthermore, whether mitigation and compensation measures are actually implemented needs to be monitored; for a more in-depth discussion, see Partidario and Fischer (2004).

[1] Some systems include the preparation of rather elaborate screening reports, which in other systems would often represent a 'full' assessment report. In Canada, for example, whereas several 1000s of 'screening assessment reports' are prepared, only few full EAs are conducted.

It is important that this process is not understood to work in a strictly top-down manner, but that feedback loops are possible, if found necessary. This means that whilst the process is organised in terms of a clear line of stages, it can work bottom-up, as well.

Perceptions of what effective SEA processes look like have changed over the past two decades. In particular, during the late 1990s and early 2000s, post-modern communicative ideal driven debates in the planning discipline (spearheaded by e.g. Judith Innes and Patsy Healey and influenced in particular by the sociologist Jürgen Habermas) had a significant impact on the SEA community. This meant that the above described 'rational' EIA process was dismissed by some as being an inadequate basis for impact assessment at strategic decision making levels. Non-prescribed deliberative 'post-modern' processes were portrayed as the way forward (see e.g. Richardson, 2004; Caratti et al, 2004). Typical assessment approaches propagated at the time included e.g. round-tables and citizen juries (Wiklund and Viklund, 2006), in which the main focus was on deliberations rather than on aiming to achieve environmentally sustainable outcomes.

However, subsequently, this – what may be called – post-modern communicative ideal, which some considered to be a panacea to overcoming environmental assessment problems, was questioned, in particular with regards to its ability to actually steer decisions towards more environmentally sustainable solutions (Fischer, 2003). One of the main arguments brought forward was that some of the more routinely conducted plan or programme making processes were already following structured processes and that the role of environmental assessment within this context was not only to function as a platform for debate and deliberations, but also to act as a change agent for more environmentally sustainable outcomes. In this context, it was suggested that SEA needed to focus as much on outcomes as on processes.

Today, some consensus has arisen with regards to the validity of different (mainly procedural) approaches, depending on the specific situation of application. In situations where SEA is more routinely applied, e.g. in statutory land use and transport planning, structured EIA based processes have shown to be able to lead to some positive results (Fischer et al, 2009)[2]. Here, it is important to remember that SEA applied according to NEPA and the European SEA Directive already follows a systematic and structured process. Furthermore, in planning situations, where all those involved in an assessment are open to different outcomes, rather than having a pre-set mind of what the results should be, i.e. in the absence of strong vested interests and some potentially steep power gradients, round table approaches have shown to work well (see e.g. Arbter, 2004). Finally, it has also become clear that the specific cultural context may have a bearing on the way in which the instrument may be used (Fischer and Gazzola, 2006).

2.2 Scope of issues covered, level of integration and other important contextual aspects

SEA and EIA were introduced in order to address the problem of the systematic subordination of environmental aspects to economic interests in policy, plan, programme and project decision making. The original substantive focus of the instrument was therefore on bio-physical impacts, which also includes (physical) impacts on human health. Subsequently, and triggered by the emerging sustainable development agenda of the 1980s, many became convinced that SEA should include other aspects, as well. In this context, whilst some have suggested that SEA should be used as an assessment instrument which fully integrates economic, social and environmental aspects (Partidario and Moura, 2000; see also George, 2001), others have warned of the potential dangers of doing so. In this context, and based on empirical observations in both, Australia and the UK, Morrison-Saunders and Fischer (2006), for example, urged for some caution when advocating full integration of different assessment aspects in the absence of any strong empirical evidence that

[2] For project EIA, similar observations were made by e.g. Arts et al (2012)

more balanced decision making will indeed occur as a result of this integration. Empirical evidence for the need to be cautious when attempting to integrate different aspects through SEA has recently also been generated by Therivel and Fischer (2012) as well as Tajima and Fischer (2013) for English spatial planning practice where the instrument is applied within the overall framework of sustainability appraisal (SA). They found that here, environmental aspects kept being sub-ordinated to economic aspects.

It is probably fair to say that a differential approach is now prevailing, where it is widely accepted that the specific context within which SEA is applied needs to be considered before deciding on the specific format of SEA. In this context, a range of aspects are thought to be important for determining the most effective way of SEA application, including in particular (following Fischer, 2013).

- The specific decision tier: there is some evidence to suggest that the likelihood of achieving effective integration of different aspects is connected with the specific decision making tier, mainly because of existing experiences and traditions. Whereas, for example, at programme levels, in many systems traditionally different aspects have been integrated through cost benefit analysis (CBA) and multi-criteria analysis (MCA), in statutory spatial planning, the purpose of impact assessment instruments has often been to highlight implications of development options in terms of specific issues, for example the environment (usually including some health aspects), the economy and others. Finally, policy level assessments have tended to integrate different aspects more fully, the main reason being a more open approach to different futures of those involved at this level, which is often perceived to be more abstract and distant (and thus less subject to powerful interventions by those with vested interests).
- Distribution of power: in the presence of an unequal distribution of power in decision making processes, it has been suggested that the best thing SEA can do is to create transparency with regards to who (or what) wins and who (or what) loses. In this case, full integration of different assessment aspects in SEA may just lead to hiding trade-offs and could therefore be problematic (Fischer, 2013). There may either be a case for keeping different impact assessments separate (including e.g. HIA) or for creating a set of strict trade-off rules.
- The specific administrative level: Different administrative levels (e.g. national, regional and local) are frequently given different tasks and responsibilities, which may mean specific options need to be dealt with at specific administrative levels.
- Existence of a policy framework with compatible policy objectives: Frequently, economic, social and environmental (including health) objectives of policy frameworks (including sustainable development strategies) have shown to be not fully compatible (see e.g. Connelly, 2007); if this is the case, integration of different aspects through SEA is problematic.
- The institutional capacity to integrate: even in the presence of a clear wish to integrate different substantive aspects, it may be difficult to do so, because:
    - in many systems, traditionally, different administrations are used to act autonomously and may be hostile towards the idea of co-operation;
    - the technical or financial capacity to deal with very different aspects all at once may also be limited; on the one hand, more aspects may mean that more data need to be processed; on the other hand, the treatment of a range of aspects in assessment may also mean having to manage the involvement of (potentially too) many people.

Overall, it is important to note that whilst a cautious approach is needed with regards to the integration of different aspects, in particular those that tend to dominate and those that tend to be

subordinated to others, existing evidence suggests that integration of environmental and health (along with social) issues can often result in overall positive health outcomes (see e.g. Tajima and Fischer, 2013 and the World Bank's Strategic Environmental and Social Impact Assessment approach; OECD, 2012).

2.3 Methods and techniques used and acting strategies of assessors

As explained above, in the early years of its development, SEA was perceived as being an extension of project EIA principles to the levels of policies, plans and programmes (Emmelin, 2006). As a consequence, EIA methods and techniques were also thought to be suitable for use in SEA. Many of these are, however, based on the identification of spatially concrete impacts of proposed actions on existing land usage. Typical project EIA methods and techniques therefore include e.g. field surveys, the use of indicators, (decision focused) checklists, matrices, networks, overlays, the calculation of quantitative mass balances of impacts, photographs and photomontages (see e.g. Belcakova, 2008).

In connection with the various debates on SEA over the past two decades, understanding of what methods and techniques may be suitable for use in SEA has also advanced. This has been closely connected with an improved comprehension on how SEA differs from EIA and also how different SEAs differ from each other. In this context, it has been established that the higher the level of the strategic action, the less applicable project EIA based methods and techniques might be. This means that, for example, a conceptual policy which aims at developing a broad development vision for a certain area will need a different set of methods and techniques (i.e. possibly one that is more discursive and qualitative) than e.g. a programme, which aims at ranking potential project on the basis of e.g. multi-criteria analysis or cost-benefit analysis.

It is therefore suggested that the choice of suitable assessment methods and techniques for health inclusive SEA is particularly connected with the specific tier of decision making, i.e. whether it is applied to a policy, a plan or a programme. In this context, aspects to be considered for choosing suitable methods and techniques include (following Partidario and Fischer, 2004):

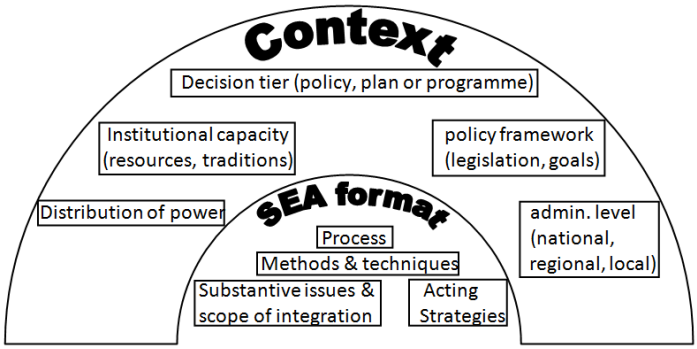
- Time scales: the more strategic the initiative is, the more likely is it to be removed from project action; therefore, a longer time perspective on likely impacts needs to be applied with increased uncertainties and increasingly less predictable futures;
- Types of data: At higher levels of decision making, assessment issues are frequently not readily quantifiable, but are of a more descriptive nature; methods and techniques used will therefore often be of a more qualitative nature; where quantitative methods are used, they need to allow for the consideration of possible ranges of impacts (i.e. in terms of high and low potential impacts), rather than trying to calculate precise figures.
- The level of certainty: Based on longer timescales and the lack of readily quantifiable, precise data at higher decision making tiers there is less certainty in assessment. As a consequence, even the prediction of direct effects can be difficult, notwithstanding the problems involved in attempting to anticipate indirect effects.
- Types of impacts: Whilst project related decisions usually have concrete spatial, localised impacts, policy related decisions may give rise to more spatially undefined impacts and therefore may be of a more regional, national or even global scale (e.g. impacts of tax policies on future CO_2 emissions); furthermore, the cumulative nature of impacts is likely to be greater the further away an assessment situation is from individual project decisions.
- The problem of consultation and participation: Higher decision tiers are often perceived by the public as vague and distant when compared with more reactive project situations (in which 'not in my backyard' attitudes may trigger high levels of interest and

involvement); in this context, methods and techniques need to help facilitate effective consultation and participation.
- Alternatives: the more policy oriented a situation is, the more abstract and area wide the alternatives are likely to be; reliability of predictive methods and techniques is therefore likely to be lower and they should not pretend to be more precise than they actually are.

In line with the different situations described above, the role of the assessor is also likely to differ (see Fischer, 2003). In project related and structured situations, the assessor is more likely to act as a problem solver. Furthermore, if there is consensus on goals, the assessor may also act as an advocate of those. In more strategic situations with high degrees of uncertainty, an assessor is likely to act as a problem recognisor. Finally, if an assessment is striving to integrate different aspects, the assessor may also act as a mediator of different interests (see e.g. Runhaar and Driessen, 2007; Fischer et al, 2010).

Ultimately, acting strategies can be connected with the contingency model of organisational decision making, as first developed by Thompson and Tuden in 1956. They charted decision making models in terms of means and ends uncertainty (uncertainty about how and why to take a course of action). As a consequence of the observed levels of uncertainty, they made suggestions for how organisations may want to act, ranging from computation over judgement and bargaining to inspiration. Figure 1 summarises current thinking with regards to various contextual issues influencing the specific format of SEA, as discussed in this section.

Figure 1: The format of SEA as determined by contextual factors



Source: the author

3 Health in SEA: conceptual thinking and empirical evidence

Section 3 is divided into two sub-sections. Firstly, the role of health in environmental protection and legal requirements and rules is explored. Secondly, the conceptual thinking behind the inclusion of health in SEA is elaborated on.

3.1 Environmental protection and legal requirements and rules – the role of human health

Legal rules on environmental issues are up to several 1000s of years old and are very closely connected with human health, for example with regards to the availability of pure water. In modern times, the first pieces of environmental legislation in many countries had a health based rationale. Examples include the UK Public Health Act from 1848, which is widely considered to be the first piece of environmental protection legislation in modern Europe. This aimed at combating filthy urban living conditions, one of the effects of the industrial revolution.

Public health and the state of the biophysical environment are now considered to be inextricably linked. Health features in most environmental legislations world-wide, mostly with regards to the need for a clean and healthy environment which should not negatively impact on (physical) human health. It is within this context that SEA frequently addresses human health as an important issue to be considered at those levels where action can be pro-actively influenced, i.e. at the levels of policies, plans and programmes.

However, aspects that are connected with the biophysical environment only cover parts of what is important. Mental health and social well-being are other important issues that also need to be considered. This was already acknowledged in the now over 65 year old definition of health by the World Health Organisation:

> *Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 1946).*

So whilst environmental legislation related to e.g. sanitation, air and water quality is vital for the protection and improvement of human health, it only partly addresses what is relevant. This is essential for SEA, as evaluations of impacts in SEA are often done on the basis of environmental protection legislation. However, it is important that neither NEPA nor the SEA Directive or the UNECE SEA protocol suggest that it is only biophysical aspects of health that should be considered. As a consequence, awareness that non-physical health components should be considered is growing in the SEA community.

3.2 SEA and health – conceptual thinking

As explained above, human health is an integral part of the different substantive aspects to be considered in SEA, disregarding its substantive focus, which may be a narrow, environmental focus or a wider sustainability focus. This is frequently acknowledged in SEA legislation and guidelines world-wide. In this context, the World Health Organisation (WHO) has committed itself to support the improved consideration of health in SEA, e.g. through its London and Budapest ministerial conferences on environment and health. In the Budapest Declaration of the WHO (2004), for example, health was explicitly mentioned as being an integral part of SEA.

It is also important to note that in national legislations and guidelines as well as in international declarations, the connection between the environment and health, if covered, is not normally reduced to its physical components, i.e. other social and behavioural aspects are not to be explicitly excluded. However, it appears that in practice, in many countries, the main focus of SEA is often on physical aspects (see section 4 for a more in-depth discussion). Therefore, an important question for SEA is whether and how it should widen its scope to consider other important determinants of health. As a starting point, this requires the development of a better conceptual understanding of what health relevant issues may need to be covered in SEA.

Based on the evidence generated to date it is important that the range of substantive issues covered will, at least to some extent, depend on the policy, plan and programme to which the instrument is applied, as the scope of assessment is inextricably linked with the remit and issues to be covered of the action it is assessing. For example, a research study conducted in 2011 on SEAs of English municipal waste management strategies found that the risks of different waste management options to human health (ie potential negative health impacts) were addressed rather well (Fischer et al, 2011). Another study conducted a year earlier, using the same research approach and looking at English spatial plan SEAs, on the other hand, established that human health impacts were addressed comparatively poorly (Fischer, 2010). Whilst this certainly does not mean that spatial plans may not

pose potential threats to human health, their identification for different waste management options is likely to be more obvious and straightforward, as associated impacts are bound to be more direct. Whilst indirect effects should be considered in SEA, in reality this is often difficult, as even the identification of direct impacts is usually difficult at strategic levels of decision making. This means that in reality there may be a discrepancy between the wish to consider all kinds of impacts and the ability to do so. What is important here is to stay realistic on what is doable and what is not, considering both, data and technical resources.

In order to be able to determine the extent to which health is considered in SEA, a suitable evaluation framework is needed. In this context, determinants of health which can potentially be addressed through SEA have to be identified. Determinants of health were first summarised in a model by Whitehead and Dahlgren (1991), which was subsequently developed further by Barton and Grant (2006). This model is linked to spatial scales, ranging from the global ecosystem and the natural environment over the built environment and the local community /economy to individual determinants (age, sex, hereditary factors) and lifestyles.

Important health determinants are therefore connected with (a) biophysical, (b) social, (c) economic, (d) behavioural and (e) other 'fixed' personal attributes. Whilst it is possible to influence (a) to (d), personal physical attributes are not normally changeable. However, it is still possible to exert an influence on associated health implications. For example, a person with hereditary high blood pressure and heart problems may alleviate potential impacts by e.g. exercising regularly. As the built and natural environments can either encourage or discourage certain exercises (such as cycling or walking to work), health determinants can be influenced through policies, plans, programmes and their associated SEAs and behavioural aspects are thus important.

Following on from this, it is clear that new development can influence health (Curtis et al, 2002; Thomson et al, 2006). The realization therefore that spatial planning can have an impact on human health, or as Kørnøv (2008, p60) put it:

> *'almost every planning decision potentially affects human health'*

has given rise to a rich body of work in this area. In this context, guidance has been prepared, for example in the UK (SPAHG, 2011; TCPA, 2010). Elements that are of particular importance include e.g. the spatial set-up, which can influence physical activity (Burns and Bond, 2008). This may be achieved in different ways, for example through the provision of green space, the mix of different uses and accessibility by foot and bicycle. Importantly, housing and its design affect all determinants of health. In this context, Marmot et al (2010, p30) argued that

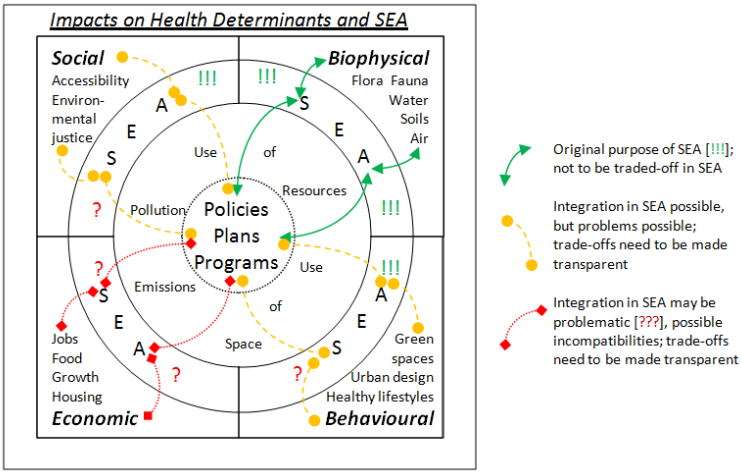
> *'planning, transport, housing, environmental and health systems [should be fully integrated] to address the social determinants of health in each locality'.*

In addition to design issues, there are other health related aspects spatial planning can influence. For example, it is now commonly accepted that crime rates – which are connected with health in communities – can be influenced by urban design (Cozens et al, 2005). Furthermore, transport and spatial planning are inextricably linked (Fischer, 2002). In this context, besides some obvious physical aspects, such as noise and other emissions, health related aspects that are important include e.g. access to health care, jobs and sports as well as physical fitness facilities (Hilbers, 2008).

Because of the connections described above, SEA can play an important role for improving the consideration of health in spatial and other sectoral plan making (see e.g. Carmichael et al, 2012). Whilst in theory at least, nothing should keep SEA from supporting the consideration of various

health aspects in policy, plan and programme making, whether this is happening in current practice to date has been researched in a few studies only. Evidence which has been produced will be summarised in the next section. Figure 2 provides for a conceptual idea of how health determinants should be approached, if addressed in SEA. What is important is that whilst in principle, all can be considered, there may be problems in terms of compatibility, in particular with aspects that are connected with economic growth. What is important in this context is that SEA as a decision support instrument should never make trade-off decisions in the absence of clear trade-off rules and in the presence of powerful interests. Whilst the main role of SEA has been seen by some as being an instrument of power mediation, there is currently no empirical evidence that this can be successfully achieved. Therefore, a cautious approach to integration should be taken (see e.g. Darlin and Yap, 2008). It is important that decision on trade-offs should always rest with decision makers. It is important that the same applied to other impact assessment instruments, as well, including HIA.

Figure 2: Approaching the consideration of health determinants in SEA: a conceptual model



Source: author

It is acknowledged at this point that incompatibilities may not only be in existence between different health determinants, but also amongst them. Regarding biophysical environmental aspects, for example, climate change mitigation and adaption measures may turn out to be incompatible (see e.g. Moser, 2012). However, here, an important role of SEA would be to weigh impacts of different options and to give recommendations for the most environmentally sustainable solutions.

4 Empirical evidence for the consideration of health in SEA

In this section, firstly the existing body of literature is briefly introduced before the emerging empirical evidence is outlined. The impact of SEA on the consideration of health is discussed and strengths and weaknesses of current practice are elaborated on. Finally, facilitating factors and barriers are identified.

4.1 Existing body of literature

To date, there have only been few studies explicitly looking at the empirical evidence for the consideration of health in SEA. What is of particular importance here is that these normally have not limited their scope to biophysical health aspects, but also considered social and behavioural aspects. Carmichael et al (2012) summarised the literature on the integration of health into urban spatial planning through impact assessment and Bond et al (2012) reflected on 'the separation of spatial planning and health planning' and the associated roles of SEA and HIA. Furthermore, Douglas et al

(2011) reflected on how well health was being considered in Scottish SEA practice, suggesting that health impacts were better considered in SEA than EIA, but that there was scope for improvement. Also, in 2011, Schmidt looked at the consideration of health and climate change in UK and German spatial plans and associated SEAs. A year earlier, Nowacki et al (2010) reflected on health in SEA guidelines and Fischer et al (2010) explored the consideration of health in eight SEAs from Austria, the Czech Republic, England, Germany, the Netherlands and Wales. Five of these were spatial plan related with the other three being from transport, waste management and economic development planning. Furthermore, in 2008, Fischer looked at the existing evidence and the potential of SEA to address health impacts. Finally, in 2006, Tomlinson established the extent to which health was considered in SEA of local transport plans in the UK.

Some more conceptual papers on the integration of health in impact assessment were provided by e.g. Morgan (2010), who argued from a New Zealand perspective in favour of bringing 'health concerns into formal IA processes' (p410), and by Wright et al (2005) who discussed whether coupling of health impact assessment (HIA) and SEA would be the best way forward. Furthermore, Mindell and Joffe (2003) looked at the linkages between HIA and other impact assessments, amongst which SEA. Finally, in 2001, the WHO released a report on the potential linkages of health impact assessment and strategic environmental assessment.

In addition to the above, there is also an emerging body of work on the connections of spatial planning and health which is of direct relevance for SEA. Barton (2009), for example, looked at the connections of land use planning and health and well-being. Furthermore, Kørnøv (2008) evaluated Danish guidance and practice on healthy spatial planning and, in this context, considered the role of SEA. Earlier, Burns and Bond (2007) provided an overview of the extent to which health features in UK spatial plans, also looking at the potential role SEA may play.

4.2 Emerging evidence on the consideration of health in SEA

What is clear from those works that have looked into the consideration of health in SEA is that in current practice, the only aspects that consistently feature are those that are of a biophysical nature. This includes in particular issues surrounding soils, weather, air, water, flora, fauna and biodiversity. SEAs also normally routinely consider issues such as noise and light pollution, vibration and smell. Furthermore, most SEAs consider some other non-physical health aspects, including those related to human behaviour, connected with e.g. food provisions and services or leisure facilities.

What aspects are considered in a specific SEA depends very much on the specific context, which may differ for e.g. different sectors and states of application. Furthermore, the institutional setup is important. English spatial plan SEAs, for example, consistently consider a range of social and economic aspects. This is not surprising, as SEA is applied here within the overall context of sustainability appraisal (SA). However, reasons for why certain aspects are considered may differ. Fischer et al (2010), for example, found that whilst English SEAs usually considered economic and social aspects, these were not normally covered in German and Dutch local spatial plan SEAs. However, in the German case, many municipalities were found to prepare separate development plans on various health issues which are the responsibility of different authorities. This means that spatial planning and health planning are done separately, rather than integrated. In Dutch practice, a range of socio-economic aspects are covered in local spatial plans. However, subsequently these are not assessed in SEA. This appears to be connected with a more narrow interpretation of what types of health impacts should be considered in SEA here. Also, and interestingly, in English transport planning, opposite to spatial planning, SEA rather than SA is applied and here, socio-economic aspects are considered to a much smaller extent. Issues that are considered include e.g. accessibility with regards to social exclusion and physical health impacts of transport, in particular with regards

to noise and other emissions (see also Tomlinson, 2006). These findings are hardly surprising, though, in the light of the findings by Nowacki at al (2010) who established that only a few current guidelines internationally fully considered non-physical health aspects.

Regarding the extent to which specific determinants of health were considered in SEA, Schmidt (2011) in his study on UK and German spatial plan related practice found that the three most frequently considered were

(a) In the UK: 'access to and availability of health facilities', 'green infrastructure / open space' and 'leisure and recreation facilities'.

(b) In Germany: 'noise', 'air quality and pollution' and also 'leisure and recreation facilities'.

Whilst more social health determinants were considered in English SA based SEA practice, despite of the above mentioned separation of health and spatial planning, German plans and their SEAs still considered some non physical health determinants, such as quality of life, accessibility to public transport and 'humane environment'. Regarding trends on the consideration of health in SEA over time, the same author also showed that there was a steady increase in the number of times health was mentioned in both, English and German spatial plans and their SEAs over time. Whilst quantification of impacts was not often attempted in English practice, this was routinely done in German SEAs. This is connected with the more specific land allocation orientation of spatial plan making here.

Finally, with regards to Danish practice, Kørnøv found that overall, health aspects were only poorly considered in 100 environmental reports (ERs; i.e. SEA report) of municipal plans. Noise, traffic security, drinking water, air pollution and recreation / outdoor life were the most extensively considered determinants. However, only noise was actually represented in over 70% of ERs with the other aspects featuring in less than 50% of them. Many other determinants were not considered at all, and most of those that were considered were usually transport related.

4.3 The impact of SEA on the consideration of health in policy, plan and programme making

There is currently only limited evidence for whether the consideration of health in PPP making is enhanced through SEA. Generally speaking, in EU member states' practices, according to the SEA Directive there is a requirement to explicitly show how SEA influenced decision-making. On that basis, summarising evidence from a range of empirical studies, Fischer et al (2010) suggested that overall SEA is clearly having an impact on PPP making, even though this impact tends to be moderate only. All indications are that this also applies to the enhanced consideration of health in PPP making.

In his study on the consideration of health in UK and German SEA practice, Schmidt (2011) looked at the number of times health was mentioned in both, 10 spatial plans and their SEAs in country. He found that on average health had more prominence in the SEA than the actual plan. From this it may be suggested that an enhanced consideration of health in spatial plan making practice in the UK and Germany is triggered through SEA.

Ultimately, what is clear though is that the extent to which health is considered in SEA is very much dependent on the institutional set-up and in particular upon the requirements to do so. This is supported by e.g. the emerging evidence of practice in Lithuania, where there are formal requirements for public health authorities to review screening and scoping documents (Zurlyte, 2009). These authorities may actually reject environmental reports if they do not agree with them. Here, it appears that health is particularly well considered when compared with practice in other countries. Generally speaking, the involvement of health authorities and stakeholders in SEA can be

seen as being key for an improved consideration of health in SEA. This is further elaborated on below.

4.4 Strengths and weaknesses of current practice – good practice examples

Empirical evidence for strengths and weaknesses of current SEA practice overall has recently been generated in a number of research studies. These include e.g. Fischer (2010; 2012); Therivel et al (2009); Therivel and Fischer (2012); Fischer et al (2011), Phylip-Jones (2012) and EC (2011), covering practice in various sectors, including spatial, transport, waste management and energy planning. Generally speaking, strengths of existing practice include a systematic and structured presentation of baseline data and of the overall results of the assessment. Similarly, practice tends to do well with regards to the description of consultation and participation exercises.

Observed weaknesses of many SEAs include a poorly established and ill-explained integration of plan and SEA processes. Similarly, alternatives/options are often poorly defined, and there are frequently problems in developing feasible and realistic alternatives. Furthermore, the impact of both, SEA and public participation on the plan is at times unclear and poorly explained. Similarly, this is also the case with regards to the identification of impact significance and the relationships with other policies, plans, programmes and assessments which is rarely fully elaborated on. Tiering – both between different administrative levels and between different policies, plan, programme and project tiers – is usually not well established and uncertainties are only rarely mentioned or addressed. Finally, the assessment of interrelationships between different aspects as well as cumulative impacts has been found to be challenging.

In terms of good practice SEAs for the consideration of health in SEA, based on the works produced by various authors to date, the following can be seen as exemplary:

- In Lithuania, there is a high level of participation of the health sector in SEA practice, based on legal requirements to do so; Lithuanian SEAs have therefore been said to be particularly health sensitive (Zurlyte, 2010).
- Generally speaking, English spatial plan SEAs (which are integrated with sustainability appraisal - SA) consider a wide range of health determinants, including physical, social and behavioural aspects; here, two examples of good practice are:
    - the SEA of the Northamptonshire spatial plan core strategy which shows a comprehensive understanding of health issues, and
    - the Brent spatial plan core strategy SEA which gives much space to the consideration of heath.
- German, Dutch and Austrian spatial plan SEAs have good practice in quantifying impacts; here, examples of good practice are
    - the spatial plan (*Flächennutzungsplan*) SEA for the city of Leipzig,
    - the SEA for the spatial plan (*structuurvisie*) Amsterdam, and
    - the SEA for the city district development plan *Reinighausgründe* of the city of Graz
- Combined strategic environmental and social assessments (SESA) are conducted by the World Bank. These consider social and behavioural components of health particularly well; an example of good practice is:
    - the Sierra Leone Mining Sector Reform (SESA).
- Also, with regards to the consideration of public radiation exposure and health care services, the Uranium rush SEA in central Namibia is an example of good practice.

4.5 Facilitating factors and barriers for the consideration of health in SEA

Regarding facilitating factors and barriers for the consideration of health in SEA, based on the evidence established so far, it is clear that there do not appear to be any differences between health and other assessment aspects, including e.g. biodiversity or climate change. Facilitators and enablers can be divided into those connected with the process of a specific SEA and those connected with the overall context within which the instrument is applied. The former include e.g. the application of a suitable assessment procedure (EIA based / non-EIA based) and the use of suitable methods and techniques. The latter include e.g. provisions for the consideration of health, a clear understanding of the issues to be addressed and the roles of those involved in assessment, clear ideas about the expectations and values of stakeholders and their effective involvement in SEA, as well as issues of appropriate funding, time and support (see e.g. Bina, 2008; Fischer and Gazzola, 2006; Fischer, 2005; Marsden, 1998).

Similarly to the above, Nowacki et al (2009, p13) suggested that facilitating factors for effectively considering health in SEA were linked with institutional, methodological and procedural aspects. Institutional aspects were said to include effective links between proponents and health authorities, a meaningful involvement of health professionals and other stakeholders as well as effective support by a dedicated body (i.e. with regards to health a health authority or an equivalent body). Methodological aspects were said to include an effective distinction between (health) aspects that should always be considered and those that should only be considered at times or in certain sectors, the availability of data from authorities and other bodies and their effective integration in SEA, as well as the definition of meaningful indicators and integrated monitoring systems. Finally, procedural aspects were said to include the application of SEA as an instrument that aims at achieving consistency of aims, objectives and actions of different sectors and tiers, an effective co-ordination with other assessment tools, a pro-active approach (i.e. anticipating developments and impacts), the consideration of social, behavioural, physical and ecological factors of health early on in the process, the consideration of data from different sources, and the effective use of dedicated resources (e.g. guidance), which considers health.

Regarding the effective involvement of health professionals, Bond et al (2013) suggested that spatial planners are frequently ill-equipped to deal with health and that the health profession rarely engages in spatial planning processes (frequently they are not statutory consultees). In this context, they suggested that the separation of functions between different professions was a particular serious problem, something which was also observed by Fischer et al (2009) for German local spatial plan related SEA practice. Finally, Carmichael et al (2012) summarised a number of barriers to the effective consideration of health in SEA. They suggested that these include aspects of knowledge, partnerships, management and resources. Knowledge aspects are connected with different conceptual understandings of health by different stakeholders. These may e.g. think of health more in terms of a narrow rather than a broader definition. Partnerships' aspects determine the extent to which stakeholders are able to effectively engage with the SEA process. They suggest that this may be connected in particular with the specific cultures of different disciplines. Finally, management and resources aspects are said to be connected with an ability to co-ordinate different appraisal processes. This includes both, the technical (management) ability and the necessary (time, technical and monetary) resources.

5 Conclusions

There can be no doubt that health already plays an important role in SEA applications globally. The National Environmental Policy Act of the US includes requirements on the consideration of health in environmental assessment. Furthermore, the European SEA Directive requires all EU member states and the SEA protocol to the Espoo Convention asks all its signatories to explicitly address health in SEA. Finally, development banks frequently ask for health to be addressed in their SEAs. As a consequence, biophysical determinants of health are already routinely considered. Depending on the specific context and policy, plan or programme making system within which SEA is applied and the sector of application, other determinants of health (social and behavioural) are also considered, albeit less frequently. Whilst the consideration of health does not mean resulting PPPs are automatically 'healthy', based on the empirical evidence emerging, it is safe to assume that SEA can lead to its improved consideration, mostly to a moderate extent (Carmichael et al (2012), Schmidt (2011) and Fischer et al (2010)).

A number of shortcomings have been observed with regards to the consideration of health in current SEA practice. Importantly, in many SEA systems, health stakeholders do not get engaged in SEA processes. One reason is that frequently they are not statutory consultees. Another is that health professionals are often uncomfortable to getting involved, as SEA is not a platform they are familiar with. Furthermore, spatial and other policy, plan and programme makers often appear to lack understanding of health issues and may, as a consequence only consider biophysical determinants of health. Getting health stakeholders involved in SEA and increasing capacity amongst policy, plan and programme makers and assessors is therefore key to improving practices. Finally, it is important that despite of the rapidly growing practice of SEA globally, empirical evidence produced so far for health and SEA is still thin and that only a tiny fraction of the now substantial body of professional literature on SEA explicitly deals with health.

Whilst integration of different environmental, social and behavioural health determinants in SEA is possible, empirical evidence suggests that this needs to be approached with care and that in certain situations, different assessment aspects are better kept separate (e.g. in dedicated assessment instruments). An important reason for applying a cautious approach is power differences between the various contributors to an 'integrated' SEA. For example, integrating transport assessment into SEA in the presence of a powerful road building lobby is unlikely to result in reduced environmental impacts from less road construction. In the absence of strong vested interests, however, integration of different impact assessments may be more unproblematic. Furthermore, problems may be reduced in the presence of formally established trade-off rules. Another important barrier which may be in the way of effective integration includes technical, human and financial resource limitations. Finally, responsibilities for health issues may not be with the authority preparing a specific policy, plan or programme, but may lie with a different body which possibly prepares their own policies, plans and programmes. In this case, achieving effective co-ordination is important. However, institutional barriers may be high, and effectively co-ordinating activities may be a challenge. Despite of these potential barriers, it is important that Integration can succeed, though, if those contributing to SEA are open to different outcomes.

Whilst there are various problems of current practices with regards to the effective consideration of health, most of them are actually not specific to health, but are generic, applying to all substantive aspects considered in SEA. They include in particular an often only moderate impact on policy, plan and programme making, an inability to pro-actively identify realistic alternatives, and a lack of capacity to successfully address cumulative and indirect impacts. Furthermore, in particular at higher tiers of decision making (i.e. policies), it is often difficult to get stakeholders and the public to engage in assessment, as the issues at stake are often thought of as being abstract and remote.

However, overall, SEA is an instrument which can work effectively towards a better consideration of health in policy, plan and programme making, not least because 'environmental reports require collecting and presenting data from various sources, which would otherwise not exist' (Schmidt, 2011, p105). Also, requirements to consider health through SEA have shown to make policy, plan and programme makers and assessors reflect on issues that they otherwise would not have. Whilst in current practice globally, it is mainly the biophysical determinants of health that are advanced through SEA, social and behavioural determinants may also be included. However, this is only likely to become more widespread in the presence of associated government policy, legal mandates or official guidance (Bond et al, 2013).

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